

What is claimed is:

1. A digital television receiver comprising:

5 a receiving section for receiving and processing a channel signal for digital television broadcasting through an antenna having a directivity in dependence upon a control signal for switching patterns of the antenna;

an antenna control section for generating the control signal for switching the patterns of the antenna based on channel information according to the received channel signal; and

an antenna switching control section for switching the patterns of the antenna during a sync signal period of the received channel signal if the control signal is generated.

2. The digital television receiver of claim 1, further comprising a storage device for storing the channel information for switching the patterns of the antenna.

3. The digital television receiver of claim 1, wherein the receiving section comprises:

20 an automatic gain control section for tuning the desired channel signal among the broadcasting channel signals received through the antenna;

a recovery section for recovering synchronization, timing, and carrier loss of an output signal of the automatic gain control section;

an equalizer for equalizing an output signal of the recovery section; and

a forward error corrector for correcting a forward error of an output signal of the equalizer.

5 4. The digital television receiver of claim 1, wherein the control signal is determined according at least one of a signal power, ghost power, and signal-to-noise ratio of the received channel signal.

5. The digital television receiver of claim 1, wherein the channel information for switching the patterns of the antenna is at least one of information on automatic gain control, sync signal restoration, symbol sync restoration, carrier restoration, and equalizer coefficient.

6. A digital television receiver comprising:

15 an antenna having a directivity in dependence upon a control signal for receiving channel signals for digital television broadcasting, and switching patterns of the antenna;

20 a signal processing section for tuning the desired channel signal among the broadcasting channel signals, and obtaining a sync signal, channel information for switching the patterns of the antenna, and audio and video signals for display by processing the tuned channel signal;

an antenna control section for generating a control signal for switching the patterns of the antenna according to the channel information; and

5 an antenna switching control section for switching the patterns of the antenna during a sync signal period of the tuned channel signal in response to an antenna-switching-related signal provided from the antenna control section when the control signal is generated.

8 7. The digital television receiver of claim 6, wherein the antenna-switching-related signal includes a switching request signal for requesting switching of the antenna patterns according to the channel information, pattern information of the antenna, and system performance signal of the signal processing section.

85 8. The digital television receiver of claim 6, wherein if the pattern information of the antenna is similar to the present pattern of the antenna, the antenna switching control section provides a freeze signal to the signal processing section during switching of the patterns of the antenna, and after the switching, provides an unfreeze signal to the signal processing section.

20 9. The digital television receiver of claim 6, wherein the antenna switching control section provides an antenna switching enable signal to the antenna control section during the sync signal period.

10. The digital television receiver of claim 6, wherein the sync signal is a field sync signal generated for each field of the channel signal.

11. An antenna control method in a digital television receiver having a signal processing section provided with a direction-adjustable antenna and an equalizer, and an antenna control section for generating a control signal for controlling patterns of an antenna, the method comprising the steps of:

(a) receiving a channel signal through the antenna as rotating the antenna;

(b) storing in a storage device the pattern of the antenna and channel information corresponding to the pattern of the antenna when the channel signal is received; and

(c) switching the pattern of the antenna during a sync signal period of the channel signal if an antenna switching request is received from the antenna control section.

12. The method of claim 11, wherein the step (c) comprises the steps of:

(d) confirming whether the antenna switching request signal is generated from the antenna switching section;

(e) if the signal processing section is not in a lock state, or the pattern of the antenna to be switched is not similar to the present pattern of the antenna, performing a unsuccessful or discontinued direction process;

(f) if the signal processing section is in the lock state, and the pattern of the antenna to be switched is similar to the present pattern of the antenna, switching the pattern of the antenna during the sync period of the channel signal;

5 (g) if the switching of the antenna pattern is completed, and the channel information corresponding to the switched antenna pattern is stored in the storage device, performing a channel mode process; and

(h) if the switching of the antenna pattern is completed, and the channel information corresponding to the switched antenna pattern is not stored in the storage device, returning to the step (d).

13. The method of claim 12, wherein the channel mode process comprises the steps of:

15 performing the step (d) if the channel information corresponding to the antenna pattern to be switched is not stored in the storage device, while setting up the channel information to the signal processing section, and permitting the switching of the antenna pattern if the channel information corresponding to 20 the antenna pattern to be switched is stored in the storage device, and if the switching is completed, limiting another switching of the antenna pattern; and

indicating a success state if the signal processing section is in the lock state, while indicating an unsuccessful state if the

signal processing section is not in the lock state, and performing the step (d).

14. The method of claim 12, wherein the step (f) comprises the steps of:

5 if the signal processing section is in the lock state and the pattern of the antenna to be switched is similar to the present pattern of the antenna, freezing an equalizer of the signal processing section and waiting for the sync signal period; and

if the sync signal period has come, freezing the signal processing section except for the equalizer, and switching the present pattern of the antenna to the pattern of the antenna to be switched.

15. The method of claim 12, wherein the step (g) comprises the steps of:

if the switching is completed, unfreezing other components of the signal processing section except for the equalizer;

if the channel information corresponding to the antenna pattern to be switched is stored, calling the channel mode process, while if the channel information corresponding to the antenna pattern to be switched is not stored, unfreezing the equalizer of the signal processing section; and

confirming whether the signal processing section is locked, indicating a success state if the signal processing section is in

the lock state, while indicating an unsuccess state if the signal processing section is not in the lock state, and then performing the step (d).

16. The method of claim 12, wherein the unsuccess or 5 discontinued direction process comprises the steps of:

if the channel information corresponding to the antenna pattern to be switched is stored in the storage device, calling the channel mode process;

if the channel information corresponding to the antenna pattern to be switched is not stored, initializing the signal processing section, switching the antenna pattern to the antenna pattern to be switched, and limiting another switching of the antenna pattern if the switching is completed; and

if the signal processing section is in the lock state, indicating the success state, while if the signal processing section is not in the lock state, indicating the unsuccess state.

17. The method of claim 16, wherein the channel mode process comprises the steps of:

20 performing the step (d) if the channel information corresponding to the antenna pattern to be switched is not stored in the storage device, while setting up the channel information to the signal processing section, and permitting the switching of the antenna pattern if the channel information corresponding to the antenna pattern to be switched is stored in the storage

device, and if the switching is completed, limiting another switching of the antenna pattern; and

indicating the success state if the signal processing section is in the lock state, while indicating the unsuccess state if the signal processing section is not in the lock state,
5 and performing the step (d).

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